

# The role of physical activity for recovery after surgical procedures

Akademisk avhandling

Som för avläggande av medicine doktorsexamen vid Sahlgrenska akademien, Göteborgs universitet kommer att offentligen försvaras i Arvid Carlsson, Medicinargatan 3, den 12 mars 2021, klockan 9.00.

av Aron Onerup

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## Avhandlingen baseras på följande delarbeten

- I. Onerup A, Angeras U, Bock D, Börjesson M, Fagevik Olsén M, Gellerstedt M, Haglind E, Nilsson H, Angenete E. The preoperative level of physical activity is associated to the postoperative recovery after elective cholecystectomy - A cohort study. *International journal of surgery*. 2015;19:35-41.
- II. Onerup A, Bock D, Börjesson M, Fagevik Olsén M, Gellerstedt M, Haglind E, Nilsson H, Angenete E. Is preoperative physical activity related to post-surgery recovery? -a cohort study of colorectal cancer patients. *Int J Colorectal Dis*. 2016;31(6):1131-40.
- III. Onerup A, Angenete E, Bonfre P, Börjesson M, Haglind E, Wessman C, Nilsson H. Self-assessed preoperative level of habitual physical activity predicted postoperative complications after colorectal cancer surgery: A prospective observational cohort study. *Eur J Surg Oncol*. 2019;45(11):2045-51.
- IV. Onerup A, Angenete E, Bock D, Börjesson M, Fagevik Olsén M, Grybäck Gillheimer E, Skullman S, Thörn S-E, Haglind E, Nilsson H. The effect of pre- and post-operative physical activity on recovery after colorectal cancer surgery (PHYSSURG-C): study protocol for a randomised controlled trial. *Trials*. 2017;18(1):212.
- V. Onerup A, Andersson J, Angenete E, Bock D, Börjesson M, Ehrencrona C, Fagevik Olsén M, Larsson P-A, de la Croix H, Wedin A, Haglind E. Effect of short-term homebased pre- and postoperative exercise on recovery after colorectal cancer surgery (PHYSSURG-C): A randomized clinical trial. Manuscript.

**SAHLGRENKA AKADEMIN  
INSTITUTIONEN FÖR KLINISKA VETENSKAPER**



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# The role of physical activity for recovery after surgical procedures

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## **Abstract**

The aim of this thesis was to determine the association between and effect of preoperative physical activity and postoperative recovery after surgery due to gallbladder disease or colorectal cancer.

Paper I examined the association between self-reported level of physical activity before cholecystectomy and postoperative recovery in an observational cohort study. Participants with regular physical activity had lower risk for prolonged sick leave compared to participants who were inactive. Papers II and III determined the association between self-reported level of physical activity before colorectal cancer surgery and recovery in an observational cohort study. Habitual physical activity was not associated with the primary outcome measure, length of hospital stay, but an association was found between higher levels of physical activity and improvements in physical recovery three weeks postoperatively and reduced risk for postoperative complications. Paper IV describes the design of a randomised controlled trial with a pragmatic short-term physical activity intervention before and after colorectal cancer surgery, aimed to improve self-assessed physical recovery four weeks postoperatively as well as several secondary outcome measures of postoperative recovery. Paper V reports the main results from this randomised controlled trial, where the intervention had no effect on any of the primary or secondary short-term outcome measures in the study. The results from the works included in this thesis imply that habitual physical activity is associated with faster postoperative recovery after cholecystectomy and colorectal cancer surgery, but that postoperative recovery cannot be improved by a short-term physical activity intervention.

**Keywords:** physical activity, surgery, colorectal cancer